Chapter VI
Summary and Conclusion

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6.1 Study in Retrospect

The present study was designed to develop and to find out the effectiveness of Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for Enhancing Life Skills among Secondary School Students of Kerala. The study was also designed to assess the level of Life Skills of Secondary School students, awareness of secondary school science teachers on contextualization of science teaching and learning.

6.2 Objectives of the Study

The objectives taken for the study are classified into two:

i) Major objectives ii) Minor objectives

Major Objectives

1. To Develop Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for enhancing Life Skills among secondary school students.

2. To test the effectiveness of the Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for enhancing Life Skills among Secondary School students.
Minor Objectives

1. To assess the Life Skills of secondary school students.

2. To study the awareness on Contextualisation of science teaching and learning among secondary school science teachers.

3. To compare the Life Skills of secondary school students belonging to different subsamples based on, Gender, Type of Management of the Institution, Type of Family, and Locale of the Family.

4. To compare the awareness of secondary school science teachers belonging to different subsamples based on, Gender, Type of Management of the Institution, Length of Teaching experience.

5. To find out the effectiveness of the developed Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for enhancing Life Skills among secondary school students based on Gender and Type of Management of Institution.

6. To find out the effectiveness of the developed Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy in enhancing Achievement in Biology of secondary school students for the whole sample, and the relevant subsamples based on Gender and Type of Management of Institution.

7. To compare the effectiveness of Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy and the presently followed activity method of instruction in schools for enhancing Life Skills and Achievement.
in Biology for the total sample and the relevant subsamples based on Gender and Type of Management of the Institution.

6.1.2 Hypotheses

Hypotheses

1. There is no significant difference in the Life Skills of secondary school students for the total sample and the relevant subsamples based on

   a) Gender
   b) Type of Management of Institution
   c) Type of Family
   d) Locale of Family

2. There is no significant difference in the awareness of secondary school science teachers on contextualizing of science teaching and learning for the whole sample and the relevant subsamples based on

   a) Gender
   b) Type of Management of the Institution
   c) Length of Teaching Experience

3. There exists no significant difference in the Life Skills and Achievement in Biology of secondary school students when taught through Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution.
4. There exists no significant difference in the mean pre test scores on Life Skills and Achievement in Biology between experimental and control group for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution.

5. There exists no significant difference in the mean post test scores on Life Skills and Achievement in Biology between experimental and control group for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution.

6. There exists no significant difference in the mean pre test scores and mean post test scores on Life Skills and Achievement in Biology for the experimental group for the whole sample and for the relevant subsamples based on Gender and Type of Management of Institution.

6.1.3 Methodology

Survey and experimental methods were adopted for the present study. The method adopted was experimental method and the design used was Quasi-experimental pre-test-post test experimental group control group design. Both the experimental and control groups were subjected to pre test and scores determined Experimental group was taught with developed Contextual Teaching Learning Package in Biology based ‘REACT’ strategy and control group was taught the same topic by the existing activity method. Immediately after instruction, experimental groups and the control groups were administered post test based on Life Skills. The
scores obtained after conducting the post test were subjected to statistical analysis and the results compared.

6.1.4 Sample

Sample for the study consisted of both secondary school students and science teachers. The investigator adopted a random sampling technique for selecting the sample for the experimentation. For the survey the investigator selected four districts namely Kasargod, Kannur, Wayanad and Kozhikode by using random sampling technique. Sample for the experiment consisted of VIII standard students from two schools of Kannur district.

6.1.5 Tool

1. Ravans’ Standard Progressive Matrices (Ravan, 1968)

2. Life skills Assessment Scale for secondary school students (Bindu and Helen, 2012)

3. Scale to study the awareness of science teachers’ on Contextualisation of science teaching and learning (Bindu and Helen, 2012)

4. Achievement test in Biology (Bindu and Helen, 2014)

5. Package Evaluation Schedule (Bindu and Helen, 2012)

6.1.6 Material Developed

Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy
6.1.7 Statistical Techniques

For analyzing the data, the investigator used the test of significance of difference between the mean scores of two groups (t test) and to test the genuineness of the difference between experimental and control group groups ANCOVA was applied. For find out how much the effectiveness of the package Effect size Cohen’s d was calculated.

6.2 Major Findings

The major findings that have emerged from the present study are the following:

- The level of Life Skills of secondary school students is below average
- There is no gender difference in Life Skills among boys and the girls.

A study conducted by Pereira and Krishnan, 2011 on Life Skills of secondary school students in Kerala. The results revealed that gender has no influence on the Life Skills of students. The present study substantiates such earlier reported studies.

- Aided and Government school students have same Life Skills when compared.

school students have better Life Skills than government school students. Result of this study is in corroboration with the above findings of the present research.

- Students from Nuclear and Joint families exhibit difference in their Life Skills when compared. Students from the joint family show high Life Skills than their counterpart in the nuclear family.

Ayidhya et al (2007) reported that for 12 to 14 years of age family factors were most predictive of psycho-social development. The culture and structure of family greatly affect students Skills and performance.

- Students from the Rural and Urban family exhibit difference in their Life Skills. Students from the Rural family show higher Life Skills than the Urban students.

Pereira and Krishnan,(2011) analyzed the Life Skills of secondary school students in Kerala. The results revealed that the students from Rural area have more Life Skills than those from Urban area. This result supports the above findings that Urban students have an upper hand in Life Skills than the rural students.

- Secondary school science teachers are average in their awareness on Contextualization of science teaching learning.

- There is no gender difference in the awareness of secondary school science teachers on contextualization of science teaching and learning
• Teachers from government school and aided schools do not exhibit any significant differences in their awareness on contextualization of science teaching and learning.

• Teachers exhibit differences in their awareness on the Contextualization of science teaching and learning based on the Length of Teaching Experience. Teachers with above 10 years of experience show higher awareness than those with below 10 years of experience.

6.3 Tenability of Hypotheses

Hypothesis 1

There is no significant difference in the Life Skills of secondary school students for the total sample and the relevant subsamples based on

a) Gender
b) Type of Management of Institution
c) Type of Family
d) Locale of Family

The findings show that there is no difference between boys and girls and government and aided school students in their Life Skills. Students show differences in their Life Skills based on type of family and Locality of the family.

Therefore, above stated hypothesis accepted in the case of Gender and Type of Management of the Institution and rejected in the case of Type of Family and Locale of the Family.
Hypothesis 2

There is no significant difference in the awareness of secondary school science teachers on contextualizing of science teaching learning for the whole sample and the relevant subsamples based on

a) Gender
b) Type of Management of the Institution
c) Length of Teaching Experience

The findings show that teachers differ significantly based on the Length of Teaching Experience. There is no Gender difference on teachers’ awareness on contextualization of science teaching and learning. Teachers do not differ significantly based on Type of Management of Institution.

Hence the above stated hypothesis is rejected in the case of Length of Teaching Experience and accepted in the case of Gender and Type of Management of Institution.

Hypothesis 3

There exists no significant difference in the Life Skills and Achievement in Biology of secondary school students when taught through Contextual Teaching Learning Package in Biology based on ‘REACT’ strategy for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution

The analysis of the test score revealed that there is significant difference in the scores of Life Skills and Achievement in Biology for total sample and the
relevant subsample based on Gender and Type of Management of Institution after taught through Contextual teaching Learning Package in Biology based on ‘REACT’ strategy. The hypothesis formulated above is substantiated with the results.

**Hypothesis 4**

There exists no significant difference in the mean pre test scores on Life Skills and Achievement in Biology between experimental and control group for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution.

The difference between the mean pre test scores on Life Skills and Achievement in Biology between experimental group and control group is not significant statistically for the whole sample and subsamples based on Gender and Type of Management of Institution. Hence the hypothesis that formulated is not rejected with the results of the present research.

**Hypothesis 5**

There exists no significant difference in the mean post test scores on Life Skills and Achievement in Biology between experimental and control group for the whole sample and the relevant subsamples based on Gender and Type of Management of Institution.

The difference between the post test scores on Life Skills and Achievement in Biology of experimental group and control group is significant statistically for
whole sample, and the relevant subsamples based on Gender and Type of Management of Institution. Hence the hypothesis that formulated is rejected in the case of Life Skills and accepted in the case of achievement.

**Hypothesis 6**

There exists no significant difference in the mean pre test scores and mean post test scores on Life Skills and Achievement in Biology for the experimental group for the whole sample and for the relevant subsamples based on Gender and Type of Management of Institution.

The difference between the mean pre test-post test scores of experimental group is significant statistically for the whole sample and the relevant subsample based on Gender and Type of Management for Life Skills and Achievement in Biology. Hence the hypothesis formulated above is not accepted.

**6.4 Educational Implications of the Study**

The present study has got many far reaching educational implications, both for theory and practices of education.

- The present investigation attains significance that its findings help the educationist and policy makers to focus their attention for adopting innovative instructional strategies, teaching approaches and empower them in the areas where Life Skills are needed. The findings of the study would be helpful in formulating Science curriculum for facilitating the acquisition of Life Skills along with achievement in Science.
• Contextual Teaching Learning Package in Biology based on REACT strategy was found to be more effective than the activity methods for enhancing Life Skills. Such a package using principles and strategies of Contextual Teaching Learning can enhance the development of Life Skills and hence policy makers, educational practitioners and curriculum planners can adopt and inculcate different strategies of Contextual Teaching Learning to make teaching and learning more meaningful.

• Result revealed that REACT strategy is good for enhancing achievement in Biology also. In the present situation, when the students are already engaged with many academic exercises, including doing projects, assignments and so on, implementation of materials for imparting life skills would be an additional burden. Hence maximum number of chapters can be prepared by integrating Contextual Teaching Learning principles and strategies helps to develop Life Skills and Achievement simultaneously. Therefore such text books help to impart Life Skills and achievement without time consuming.

• From the findings it is clear that the activity method still retains its status. That means, if activity method is practiced, it will enhance academic achievement of the students. So provide regular and periodical in-service training to all the teachers of Kerala on the present strategy of teaching with the integration of Contextual Teaching Learning principles. This can enhance the performance of teachers and students to develop Life Skills.
It was revealed from the study that the students from nuclear family possess low levels of life skills than that of those from joint family. This finding needs attention from the parts of society as we are fortunately or unfortunately forced to accept the nuclear family system which seems to be rightly contradictory. This might be due to the fact that the students hailing from joint families enjoy ample opportunities in their families to interact with others of almost all ages. Development of component of Life Skills like cooperation, tolerance, perseverance etc requires interaction, independence and interdependence. All these attributes seems to be easy for them which invariably transform them into person with higher level of Life Skills. Such family encourage risk taking, tolerance, sharing, cooperation, mutual respects, perseverance thereby allowing students to learn from failures as well as successes and thus to stretch their abilities (Hamburg, 2005).

Whereas in the case of students from nuclear families there is little scope for this harmonious atmosphere, especially if their parents are employed. Since Life skill is an essential component for successful life in this scenario, Life Skills should be imparted at all stages of school life without compartmentalization.

Contextual Teaching and Learning strategies used are effective for enhancing life skills and hence text books are to be prepared in such a way that it gives emphasis to achievement of content and Life skills than the compartmentalization of subjects.
• Teachers are less aware about the Contextual Teaching Learning strategies; hence innovative instructional strategies based on Contextual Teaching Learning are to be included in pre service and in-service training programmes for teacher educators and teachers.

• Science learning is never limited within the four walls of the classroom. Ample infrastructures of classroom are essential for the effective implementation of science concepts and adequate infrastructure suitable to the needs and objectives of the content is essential for the successful implementation of the subjects.

6.5 Suggestions for Further Research

• The present study has emphatically proved the effectiveness of contextual teaching learning package based on ‘REACT’ strategy for enhancing selected life skills among secondary school students. Hence for making the study more valid similar studies can be done in the other subjects and are different stages of education.

• Since the study was limited within the classroom, the study can be extended outside the four walls and its practical implications in different educational contexts can be studied.

• In the area of personality variables and cognitive variables of psychology other than Life Skills, the impact of REACT strategy can be found out.
• A similar study can be conducted by taking into consider all the ten Life Skills and a study can be done for component wise analysis of Life Skills using ‘REACT’ strategy.

• Contextual learning always stresses for the need of experience learning and work based learning. Studies can be done in the areas of vocational education, technical education and applied courses.

• Research can be done in the areas of teacher education to make teaching learning process more creative and interesting by accepting different strategy of Contextual Teaching and Learning.

• A study can be done to find out the impact of family on Life Skills as the present study revealed that students from the nuclear family have low level of Life Skills.

Conclusion

“The goals all schools try to achieve are both reflections of the needs of society and the needs of the student” (NCF, 2007). Education is vital for producing brains bestowed with knowledge to give innovative ideas. Advancement of any society or nation depends on the quality of education being imparted there. For quality education we have to adopt modern and easy understandable technique of teaching. We find a paradigm shift taking place in the basic process of education - from teaching to learn, to helping to know. If knowledge is not to be seen as a ‘commodity’ to be acquired through transmission, but as a subjective experience then the learning is required to take place within the individual. Learners create their
own knowledge through the process of internalisation during their encounters with reality.

One of the major objectives of the school education is to prepare a student for life. This really means that students must grow in several dimensions as they move from schools to college and then to society. They should know how to take informed decisions as young adolescents about to step into the world. They need to develop and grow using their ability to interact with their peers, society and the community. They need to develop the ability to cope with change and flexibility to adopt a rapidly changing environment. Participation in Creative, Scientific, Aesthetic skills, Performing arts, Eco Club and Health and Wellness Clubs helps them to develop holistically. Along with these aspects academic achievement is also essential for students. The study reveals that this strategy is effective for enhancing both Life Skill as well as Achievement.